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Group-Washington

November 20, 1995

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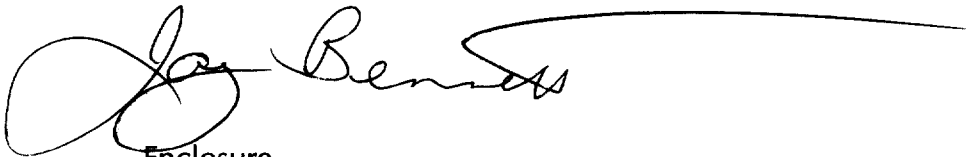
Dear Mr. Caton:

Re: *CC Docket No. 94-1, Price Cap Performance Review for Local Exchange Carriers; Treatment of Video Dialtone Services Under Price Cap Regulation*

On behalf of Pacific Bell, please find enclosed an original and six copies of its "Opposition to Petitions for Reconsideration" in the above proceeding.

Please stamp and return the provided copy to confirm your receipt. Please contact me should you have any questions or require additional information concerning this matter.

Sincerely,



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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of

Price Cap Performance Review for Local Exchange
Carriers; Treatment of Video Dialtone Services
Under Price Cap Regulation

CC Docket No. 94-1

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**PACIFIC BELL'S OPPOSITION TO
PETITIONS FOR RECONSIDERATION**

I. INTRODUCTION

Pacific Bell hereby opposes the Petitions for Reconsideration ("PFRs") filed by MCI and Cox Enterprises of the Commission's Second Report and Order as it applies to video dialtone ("VDT").¹ Specifically, we oppose petitioners' arguments 1) urging the Commission to reject a *de minimis* threshold that determines whether a LEC must include VDT costs and revenues in its calculation of sharing or low-end adjustments, and 2) asking the Commission to require LECs to assign at least 50 percent of their broadband network investment to VDT and no more than 50 percent to telephony.

¹ In the Matter of Price Cap Performance Review for Local Exchange Carriers; Treatment of Video Dialtone Services Under Price Cap Regulation, CC Docket No. 94-1, Second Report and Order and Third Further Notice of Proposed Rulemaking, FCC 95-394 (rel. September 21, 1995) ("Second R&O").

II. THERE IS NO REASON TO REJECT THE *DE MINIMIS* THRESHOLD

A. LECs Have No Incentive to Cross-Subsidize

The petitioners' argument that a *de minimis* standard will allow LECs to cross-subsidize their VDT offerings is inapplicable to LECs which choose a no-sharing option, as Pacific Bell has done. The *de minimis* threshold is only relevant to determine whether a LEC which chooses a sharing plan² must exclude VDT investment from its sharing calculation.

Under the FCC's proposed model, if a sharing LEC's VDT investment is an amount beneath the *de minimis* threshold, the LEC can include that investment in its calculation of its sharing obligation. But if a LEC does not need to share earnings because it has selected a productivity factor that does not require sharing, then the *de minimis* threshold is irrelevant. Under this scenario, the argument that a LEC would deliberately exaggerate its VDT investment vis a vis its telephony investment so as to reduce its sharing obligation is nonsensical, because the LEC has no such obligation.

Moreover, MCI is incorrect to suggest that providing a service at less than its fully distributed cost will result in a "subsidy."³ If a service covers the additional cost of producing it, it recovers its incremental cost and is not being cross-subsidized, regardless of whether or not the LEC offering the service elects sharing.⁴

² We understand it is the Commission's long term goal to eliminate sharing altogether. We wholeheartedly endorse this view, and urge that it come to fruition sooner rather than later.

³ MCI's Petition, at 3-4.

⁴ See D. Spulber, Deregulating Telecommunications, 12 The Yale Journal on Regulation 25, 58-59 (1995) ("Spulber") (Exhibit A hereto).

In this regard, MCI's reliance on the Commission's 1987 decision regarding separation of regulated from nonregulated activities -- an issue irrelevant to VDT -- is misplaced. There, the Commission explained that its purpose in adopting a full allocation standard was not to prevent cross subsidy:

We affirm our intention stated in the NPRM to build our cost allocation scheme upon the premise of full allocation of costs. The reason for this is not that we deem full allocation to be synonymous with prevention of cross-subsidy. In fact, we do not entirely disagree with the parties who observe that cross subsidy could, in theory, be avoided when all of the long run incremental costs of an activity are borne by that activity. However, we also agree with DOJ and others who argue that our purposes should transcend prevention of cross-subsidy.⁵

Thus, the assumptions the petitioners make are flawed, and allowing a *de minimis* threshold does not create risks of cross-subsidy.

B. There Is Precedent For A *De Minimis* Threshold

Contrary to the petitioners' representation, there is precedent for adopting a *de minimis* threshold for purposes of sharing or refund calculations. As NYNEX pointed out in its comments submitted in response to the Commission's Notice of Proposed Rulemaking ("NPRM") in this docket,

[U]se of 25 basis points in calculating the [*de minimis*] threshold is supported by FCC precedent concerning the rate of return buffer zone for triggering earnings refund obligations. Under previous rules, the Commission prescribed an enforcement buffer of 25 basis points above the authorized rate of return, such that earnings within the buffer were deemed not significant enough to trigger refund obligations. Indeed, prior to 1987 the FCC applied an enforcement buffer of 50 basis points.⁶

⁵ In the Matter of Separation of Costs of Regulated Telephone Service From Costs of Regulated Activities, CC Docket No. 86-111, Report and Order, 2 FCC Rcd 1298, 1312 (1987) (emphasis added).

⁶ NYNEX Comments, dated October 27, 1995 (Exhibit B hereto) (emphasis added).

While we believe the *de minimis* threshold should be higher than 25 basis points,⁷ the issue here is whether there is precedent for any *de minimis* threshold, and there is.

The Commission's reasoning in adopting a *de minimis* threshold is sound and should be upheld. As the Commission stated in the NPRM, there may be situations in which the administrative burden of excluding costs from a sharing calculation outweigh any benefit which would inure to ratepayers as a result of the exclusion.⁸

The Commission appears to be attempting to set the appropriate balance between requiring LECs to identify video-related costs which have an impact on sharing, while still encouraging the LECs to get into the VDT line of business. Small trials will not make an impact on sharing calculations. If including *de minimis* amounts of VDT affects sharing at all, the amount of sharing likewise would be *de minimis*.

III. THE COMMISSION SHOULD NOT ADOPT A 50-50 VIDEO-TELEPHONY ALLOCATION FORMULA

Cox advocates that the Commission require LECs to assign at least 50 percent of their broadband network investment to VDT and no more than 50 percent to telephony.⁹ This request is outside the scope of this proceeding, and ignores numerous FCC pronouncements that the issue of cost allocation between VDT and telephony will be resolved on a case-by-case basis when each LEC issues its VDT tariffs.¹⁰

⁷ See Comments of Pacific Bell in Response to Third Further Notice of Proposed Rulemaking, at 2-3.

⁸ Second R&O, ¶ 35.

⁹ Cox PFR, at 4.

¹⁰ See, e.g., In the Matter of Telephone Company-Cable Television Cross-Ownership Rules, Sections 63.54-63.58, CC Docket No. 87-266, Memorandum Opinion and Order on Reconsideration and Third Further Notice of Proposed Rulemaking, 10 FCC Rcd 244 (1994)

Because the LECs' VDT offerings are so dissimilar, it makes no sense to establish arbitrary rules for video-telephony cost allocation, such as the 50-50 "bright line" Cox proposes.¹¹ As the Commission stated a year ago:

The Commission currently has generally applicable rules in place that specify the cost support that must be submitted with any new service tariff, including a video dialtone tariff. . . . LECs have proposed a number of different network architectures for video dialtone, and there are wide variations in the manner in which, and the degree to which, LECs are proposing to integrate their video dialtone systems with their telephone networks. This diversity and experimentation, which we view as beneficial to the development of a modern telecommunications infrastructure, precludes us from adopting a one-size-fits-all rule for the identification of video dialtone direct costs. The tariff review process, which includes the possibility of tariff investigations . . . will allow close examination of each LEC proposal and enable us to require such cost information as may be necessary to evaluate each proposal.¹²

Thus, the Commission has already considered, and rejected, the cable industry's proposed cookie cutter approach to cost allocation, and has stated consistently and on numerous occasions that the appropriate video-telephony allocations will be decided at

("Recon. Order"), ¶ 207 ("Local telephone companies will be required to make a cost-based showing under the price caps new services test, to establish initial video dialtone prices. . . . [T]his test, as established in the established tariff review processes, provides an adequate vehicle for full consideration of the reasonableness of proposed video dialtone rates") (emphasis added). See also In the Matter of Applications of Pacific Bell, File Nos. W-P-C 6913-6916, Order and Authorization, FCC 95-302 (rel. August 15, 1995) ("Section 214 Order"), ¶ 94 (deferring specific video-telephony cost allocation issues to tariff process)..

¹¹ See In the Matter of Reporting Requirements on Video Dialtone Costs and Jurisdictional Separations for Local Exchange Carriers Offering Video Dialtone Services, DA 95-2026, AAD No. 95-59, Memorandum Opinion and Order (rel. Sept. 29, 1995), ¶ 16 ("Neither the Commission, nor the Bureau has mandated specific cost accounting and allocation rules for VDT. The Commission is simply requiring LECs to indicate how they are accounting for VDT, to identify dedicated and shared VDT costs, and to disclose the impact of VDT on the jurisdictional separations process and local telephone rates") (emphasis added).

¹² Recon. Order, ¶ 214 (emphasis added).

each LEC's tariff stage. Cox is beating a dead horse, and its suggestion should be summarily rejected.

IV. CONCLUSION

We request that the Commission reject the petitioners' arguments, and adopt the suggestions Pacific Bell made in its comments in response to the Notice of Proposed Rulemaking.

Respectfully submitted,

PACIFIC BELL

A handwritten signature in cursive script, appearing to read "Sarah Rubenstein", written over a horizontal line.

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Date: November 20, 1995

CERTIFICATE OF SERVICE

I, Chuck A. Nordstrom, hereby certify that on this 20th day of November, 1995 a true and correct copy of the foregoing **Opposition To Petitions For Reconsideration** was mailed, first class-postage prepaid, to the parties shown on the attached list.


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Deregulating Telecommunications

Daniel F. Spulbert†

The consent decree that restructured the telecommunications industry by breaking up the Bell System assigned long-distance and equipment manufacturing to AT&T while forbidding the Regional Bell Operating Companies from entering these lines of business. These restrictions were justified by arguments that the local exchange network was a natural monopoly, that the carriers benefited from barriers to entry, that they could leverage their monopoly power into other markets, and that they would use revenues from local service to subsidize their entry into other lines of business. In this Article, Professor Spulber shows that these arguments are no longer valid because of technological and market changes in the telecommunications industry.

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Introduction

In 1982, a consent decree known as the Modification of Final Judgment (MFJ) terminated one of the most significant antitrust suits since *Standard Oil*.¹ The breakup of the Bell System, which took place on January 1, 1984, constituted a large scale vertical divestiture. The MFJ assigned the long-distance and equipment manufacturing functions of the Bell System to AT&T.

1. *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

The local exchange services were divided among seven Regional Bell Operating Companies (RBOCs): Ameritech, Bell Atlantic, BellSouth, Nynex, Pacific Telesis, Southwestern Bell, and US West.

The terms of the MFJ required the RBOCs to provide "equal access" to the local network to all long-distance carriers and subjected the RBOCs to line-of-business restrictions. While regulated monopolies have traditionally been protected from rival entry, these restrictions "quarantined" the RBOCs within their markets by barring their entry elsewhere. The restrictions forbade the RBOCs from providing long-distance services from one local access and transport area (LATA) to another and from manufacturing telecommunications equipment.² A third line-of-business restriction concerning the provision of information services has been effectively removed since the divestiture.³

The Bell System breakup led to increased regulation and litigation. The MFJ established what has become a complex regulatory apparatus that both implements the terms of the consent decree and reviews the RBOCs' attempts to enter markets. Although the RBOCs were "quarantined," the MFJ calls for a triennial review, in which the RBOCs are allowed to petition the court for permission to expand into other markets. For the past decade, the RBOCs, AT&T, and the Department of Justice (DOJ) have been mired in virtually continuous litigation to interpret the MFJ's line-of-business restrictions. This has effectively placed the Federal District Court of the District of Columbia and the DOJ in the regulation business. In addition, the Federal Communications Commission (FCC) has been drawn further into increased involvement with the industry in promoting competition, particularly through administration of open access.⁴ Moreover, state regulation of the RBOCs continues to exist.

This Article examines whether it would serve economic efficiency and consumer well-being to remove the two remaining line-of-business restrictions imposed on the RBOCs. This question is important for several reasons.

2. The local exchange network is the portion of the public switched network served by the local exchange carriers which include the seven RBOCs as well as hundreds of independent telephone companies. The designated areas served by the RBOCs are referred to as LATAs. The RBOCs provide both exchange services, such as basic dial tone service, call waiting, call forwarding, and Centrex, as well as exchange access services, such as connection to long-distance carriers. The interLATA or interexchange network is the portion of the public switched network that is served by the long-distance carriers. See NORTH AM. TELECOMMUNICATIONS AN'N, *INDUSTRY BASICS* 19-22 (4th ed. 1991).

3. For thorough discussions of the divestiture and its aftermath, see ROBERT W. CRANDALL, *AFTER THE BREAKUP: U.S. TELECOMMUNICATIONS IN A MORE COMPETITIVE ERA* (1991); MICHAEL K. KELLOGG ET AL., *FEDERAL TELECOMMUNICATIONS LAW* (1992); PETER TEMIN, *THE FALL OF THE BELL SYSTEM* (1987); Paul W. MacAvoy and Kenneth Robinson, *Winning by Losing: The AT&T Settlement and its Impact on Telecommunications*, 1 YALE J. ON REG. 1 (1983); Paul W. MacAvoy and Kenneth Robinson, *Losing by Judicial Policymaking: The First Year of the AT&T Divestiture*, 2 YALE J. ON REG. 225 (1985).

4. See DANIEL F. SPULBER, *REGULATION AND MARKETS* 16 (1989).

Telecommunications is a substantial sector of the American economy.⁵ Moreover, given the convergence of computers and telecommunications, continued technical progress is a vital part of the information economy.⁶ Furthermore, the lessons from the telecommunications industry are applicable to other network industries such as electric power, natural gas, cable television, water services, and postal delivery, each of which is experiencing technological change that is breaking down monopolies and destabilizing the established regulatory regimes.

Taking into consideration the current and past conditions of the telecommunications industry, this Article evaluates the four principal economic arguments for keeping the line-of-business restrictions on the RBOCs. These arguments, often directed at local exchange carriers (LECs) generally, can be summarized as follows:⁷

1. The LECs' production technology in the local exchange exhibits the property of natural monopoly.
2. The LECs are the beneficiaries of significant barriers to entry into the local exchange.
3. The LECs can leverage the local-exchange monopoly into other markets.
4. The LECs can employ cross-subsidization from local service to gain competitive advantages upon entry into other lines of business.

These arguments for preserving the MFJ's line-of-business restrictions are irreconcilable with economic and technological developments in the industry since the MFJ. Continuing the restrictions could only be based on an improper economic analysis of industry conditions. Vacating the MFJ's restrictions would enhance efficiency in the industry and serve the public interest.

5. In 1992, United States telecommunications service and equipment revenue was \$221.4 billion; the estimated revenue for 1993 was \$238.8 billion. U.S. DEP'T OF COMMERCE, U.S. INDUSTRIAL OUTLOOK 1994, 29-1 (1994) (1992 domestic and international service revenue \$169.2 billion; 1993 estimate \$179.4 billion); NORTH AM. TELECOMMUNICATIONS ASS'N, 1993-1994 TELECOMM. MARKET REVIEW & FORECAST ch. V (1993) (1992 equipment market \$52.4 billion; 1993 projection \$59.3 billion). The equipment market includes data and networking, emerging technology, mobile communications, facsimile, call/voice processing, teleconferencing, consumer, private branch exchange, computer telephone integration, key/hybrid, public pay phone and network equipment.

6. See NATIONAL TELECOMMUNICATIONS AND INFO. ADMIN., U.S. DEP'T OF COMMERCE, THE NTIA INFRASTRUCTURE REPORT: TELECOMMUNICATIONS IN THE AGE OF INFORMATION (1991).

7. The term local exchange carriers refers to companies providing local telephone service and includes the RBOCs as well as other companies subject to state regulation.

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The first two arguments are related to the characteristics of the local exchange market. The AT&T divestiture and the line-of-business restrictions in the MFJ were predicated on the concern that local exchange telephony was a natural monopoly technology which AT&T had allegedly used to harm competition in other markets. In particular, AT&T was alleged to have provided its rivals in the long-distance market inferior or costlier connections to the local exchange than AT&T provided to its own Long Lines division, a practice sometimes referred to as "discriminatory access." The MFJ reflected Judge Harold H. Greene's concern that the RBOCs would retain a monopoly over the local exchange as a consequence of their natural monopoly technology and barriers to entry. If allowed to enter into long-distance service and equipment manufacturing, the RBOCs allegedly would have the means to deny access to competing suppliers, just as AT&T had been accused of doing prior to the MFJ.

The final two arguments attempt to predict the behavior of the LECs in the markets for long-distance and equipment manufacturing. AT&T allegedly harmed rivals by deceiving its rate-of-return regulators through misallocation of costs from inter-exchange and other operations to the local operating companies. This cross-subsidization allegedly enabled AT&T to evade rate-of-return regulation and to engage in predatory pricing against efficient competitors in markets adjacent to the local exchange. The divestiture and quarantine provisions of the MFJ reflected Judge Greene's concern that the RBOCs, like AT&T, would use their monopoly position in the local exchange markets to obtain a competitive advantage in the long-distance and equipment manufacturing markets.

The four arguments outlined above were advanced by Judge Greene as justifications for accepting the MFJ. They reflect traditional regulatory arguments that are generally not applicable to the existing telecommunications industry. The arguments were presented in testimony in the AT&T case. The Department of Justice contended that the "natural monopoly characteristics" of the local exchange precluded competition "until a point of concentration of interexchange traffic above the end office."⁸ The Court of Appeals for the D.C. Circuit, which approved the MFJ, explained that the motivation for bringing the antitrust case against AT&T and, later, the justification for the consent decree, "was that AT&T had used its natural monopoly over local exchange services to impede competition in related markets."⁹ As Judge Greene observed with regard to barriers to entry, "[t]he evidence introduced at the trial of this case clearly demonstrated that duplication of the ubiquitous

8. Response of the United States to Comments Received on the BOC (Bell Operating Company) LATA Proposals at 9-10; *United States v. Western Elec. Co.*, 673 F. Supp. 525 (D.D.C. 1987) (No. 82-192), *aff'd*, 894 F.2d 1387 (D.C. Cir. 1990).

9. *United States v. Western Elec. Co.*, 894 F.2d 1387, 1389 (D.C. Cir. 1990).

local exchange networks would require an enormous and prohibitive capital investment, and no one seriously questions that this is true."¹⁰ Elsewhere, he stated: "The government alleges that defendants have monopoly power in each of these markets and, to prove the existence of such power, evidence has been offered of market share, barriers to entry, size, and the exercise of power."¹¹

The ability of the RBOCs to leverage their power was viewed as temporary: "It is probable that, over time, the Operating Companies will lose the ability to leverage their monopoly power into the competitive markets from which they must now be barred."¹² The Justice Department stated that "[t]he reorganization of AT&T . . . is intended to eliminate the present incentives of the BOCs . . . to discriminate against AT&T's competitors in the markets for interexchange services, information services, customer premises equipment, and the procurement of equipment used to provide local exchange services."¹³ With regard to cross-subsidization, Judge Greene stated that "the proposed decree would complement the structural changes by various restrictions which are said to be designed (1) to prevent the divested Operating Companies from discriminating against AT&T's competitors, and (2) to avoid a recurrence of the type of discrimination and cross-subsidization that were the basis of the AT&T lawsuit."¹⁴

Parts I through IV of this Article demonstrate that: (1) the RBOCs' technology in the local exchange no longer exhibits cost properties associated with natural monopoly; (2) the RBOCs are not currently the beneficiaries of any significant entry barriers; (3) the RBOCs would not be able to unfairly leverage their market positions in the local exchange into other markets; and (4) the RBOCs would be unable to employ cross-subsidies from local service to achieve competitive advantages in other lines of business.

The Article concludes in Part V that the elimination of the MFJ's restrictions would enhance economic efficiency—productive, allocative, and dynamic—in the telecommunications sector. Therefore, given the central importance of telecommunications in the United States economy, elimination of the MFJ's line-of-business restrictions would significantly further the public interest.

10. 673 F. Supp. at 538.

11. *United States v. American Tel. & Tel. Co.*, 524 F. Supp. 1336, 1346 (D.D.C. 1981).

12. *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

13. Competitive Impact Statement in Connection with Proposed Modification of Final Judgment, 47 Fed. Reg. 7170, 7175 (1982) (footnote omitted). The Decree's injunctive provisions "limit the functions of the divested BOCs to preclude the possibility of a recurrence of the type of monopolizing conduct that the United States alleges to have resulted from AT&T's ownership of regulated local exchange carriers and its simultaneous participation in competitive, or potentially competitive, markets." *Id.*

14. 552 F. Supp. at 142.

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The implications of this Article extend beyond the telecommunications industry. Traditional justifications for regulating industries, such as the presence of natural monopoly technologies, may no longer apply in the presence of technological change and competitive entry. As this Article asserts in the context of the telecommunications field, technological change strikes at the heart of the natural monopoly argument. Moreover, technological progress that reduces dependence on irreversible capital investment significantly reduces the need for concern over barriers to entry.

I. The Natural Monopoly Argument

The first argument used to justify the MFJ's line of business restrictions is that the RBOCs have a monopoly over the local exchange because their technology has the property of natural monopoly. This Section defines natural monopoly and examines the application of the natural monopoly argument to the local exchange. The Section shows that the local exchange has lost or is quickly losing the characteristics of a natural monopoly and that natural monopoly is not a barrier to entry.

A. *The Definition of Natural Monopoly*

A given production technology is said to exhibit the property of natural monopoly if a single firm can supply the market at lower cost than can two or more firms.¹⁵ A sufficient condition for the cost function to have the natural monopoly property is for the technology to exhibit economies of scale, which are present if the marginal costs of production are less than the average costs of production over the relevant range of output.¹⁶ Economies of scale can be due to many different technological factors. Fixed costs are a source of economies of scale that is particularly significant in telecommunications and all other industries that require networks, such as railroads, oil, and natural gas pipelines, electricity, and water services. Fixed costs are costs that do not vary with fluctuations in output, unlike variable costs. The fixed costs of establishing a network system are the costs of facilities such as transmission

15. The concept of natural monopoly is generally credited to John Stuart Mill. 1 JOHN S. MILL, *PRINCIPLES OF POLITICAL ECONOMY* 132-54 (W.J. Ashley, ed., Augustus M. Kelly 1961) (1848). Mill emphasizes the problem of wasteful duplication of transmission facilities that can occur in utility services. The connection between natural monopoly and regulation is developed by Leon Walras with reference to the construction and operation of railroads. See LEON WALRAS, *ÉTUDES D'ÉCONOMIE SOCIALE: THÉORIE DE LA RÉPARTITION DE LA RICHESSE SOCIALE* (1936).

16. The firm's average cost function refers to the cost per unit of output evaluated at each level of output. The firm's marginal cost function refers to the additional cost of producing one more unit of output, evaluated at each level of output. Economies of scale are not necessary for natural monopoly. The natural monopoly property can be present at an output level at which the cost function exhibits decreasing returns to scale. See SPULBER, *supra* note 4, at 117.

lines, costs which are not sensitive to the level of transmission on the lines. In other words, where there are significant fixed costs such as those of transmission networks, the technology for the industry will exhibit economies of scale and thus be labelled a natural monopoly.

The need to avoid duplication of facilities, particularly duplication of the fixed costs of the network system, is an important component of the natural monopoly argument for regulation of the local exchange.¹⁷ The contention is that since costs are minimized by not duplicating transmission facilities, regulators should bar the entry of competing carriers. This argument has been put forward in a wide range of regulated industries in which transmission or transportation facilities are a significant portion of total costs.

The standard definition of natural monopoly is based on a cost function that assigns total costs to outputs. The cost function has the natural monopoly property if a firm has lower costs than would two or more firms using the same cost function.¹⁸ If the technology of local exchange telecommunications is in fact a natural monopoly, then a single firm can construct and operate that network at a lower cost than can two or more firms. Thus, the existence of a natural monopoly in the local exchange is a justification for both state and federal regulation of the industry. According to this argument, regulation of entry is necessary to achieve static efficiency by establishing the least-cost industry structure, namely a single firm. And while the focus of this Article is the MFJ's line-of-business restrictions, it should be emphasized that if the local exchange is not a natural monopoly, a substantial reevaluation of state regulation of the local exchange would also be appropriate.

A number of important aspects of the definition of natural monopoly should be highlighted, since understanding their implications is necessary to correctly apply the definition to the telecommunications industry. A natural monopoly begins with a known technology. To assert that an industry is characterized by natural monopoly assumes that there is a single best technology that is commonly known, that all firms would have access to that technology, and that all firms utilizing that technology would be at the efficient production-possibility frontier.¹⁹ In particular, the natural monopoly cost function is a long run cost function, so that investment can be adjusted to achieve the efficient level of capital investment required for operating at minimum cost for any output level.

17. *United States v. Western Elec. Co.*, 673 F. Supp. 525, 537 (D.D.C. 1987), *aff'd*, 894 F.2d 1387 (D.C. Cir. 1990).

18. See, e.g., WILLIAM J. BAUMOL ET AL., *CONTESTABLE MARKETS AND THE THEORY OF INDUSTRY STRUCTURE* 17 (rev. ed. 1988). In this text, the definition of a natural monopoly refers to an industry in which all of the firms have the same cost function.

19. See SPULBER, *supra* note 4, at 16.

B. *Natural Monopoly and the Local Exchange*

Prior to the breakup of the Bell System, the local exchange was widely viewed as a natural monopoly. Under Theodore Vail, who advanced the well known slogan "One policy, one system, and universal service," AT&T itself maintained that telephone service was a natural monopoly.²⁰ The Communications Act of 1934, which instituted federal regulation of telephone service, reflected this view.²¹ According to Alfred E. Kahn: "That the provision of local telephone service is a natural monopoly is generally conceded."²² Then Professor, now Supreme Court Justice Stephen Breyer wrote that "local telephone service seems to be generally accepted as a natural monopoly."²³ The belief that the local exchange service constituted a natural monopoly undoubtedly influenced the implementation of the MFJ's line-of-business restrictions.

The natural monopoly argument for continuation of the line-of-business restrictions asserts that the LECs, and hence the RBOCs, have a monopoly over the local exchange because the technology of the exchange exhibits the characteristics of a natural monopoly. In 1987, Judge Greene stated: "The exchange monopoly of the Regional Companies has continued because it is a natural monopoly."²⁴ From the natural monopoly argument for regulation flows the assertion that not only would one LEC serve a given market most efficiently, but also that if competition were allowed, only one carrier would survive. Thus, based on this view, regulation of the local exchange is efficient and justified.

The natural monopoly argument for regulation supports restricting entry into the local telecommunications loop and awarding a monopoly franchise. In turn, awarding a monopoly franchise provides justification not only for regulating the single firm's prices and other activities, but also for preventing the firm from engaging in other economic activities. If the natural monopoly argument for regulation is no longer valid, however, this would suggest that

20. ROBERT B. HORWITZ, *THE IRONY OF REGULATORY REFORM: THE DEREGULATION OF AMERICAN TELECOMMUNICATIONS* 99 (1989).

21. See STEPHEN BREYER, *REGULATION AND ITS REFORM* 291 (1982).

22. 2 ALFRED E. KAHN, *THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS* 127 (1971). However, Kahn observes the substantial technological change in communications after World War II, including microwave relay systems, satellites, transoceanic cable, and cable television, and comments that "[i]n the presence of such rapid change, the natural monopoly of yesterday may be transformed into a natural area of competition today; and vice versa." *Id.* at 127.

23. See BREYER, *supra* note 21, at 291. Breyer observes that while technological change may make competition possible in the future, such developments are "speculative." *Id.* at 292.

24. *United States v. Western Elec. Co.*, 673 F. Supp. 525, 537 (D.D.C. 1987), *aff'd*, 894 F.2d 1387 (D.C. Cir. 1990). "Exchange telecommunications," Judge Greene continued, "is characterized by very substantial economies of scale and scope." *Id.* at 538 (citing *AT&T Proposed Settlement, Part I: Hearing before the Senate Comm. on Science and Transportation*, 97th Cong., 2d Sess. 59 (1981) (testimony of William Baxter, Asst. Attorney General)).

restriction of entry into the local telecommunications loop is not justified. Moreover, if invalid, the natural monopoly argument cannot be used by extension to prevent the local telecommunications provider from entering into other economic activities.

Regarding the developments in the telecommunications industry since the AT&T divestiture, substantial technological change and industry transformation have rendered the natural monopoly argument invalid. There are a number of reasons why it is no longer correct to treat the local exchange as a natural monopoly.²⁵ First, there is no existing single best technology for telecommunications transmission. Second, the best potential technology or mixture of technologies is not yet known, as there continues to be substantial technological change in the industry. Third, the connectivity of networks eliminates the natural monopoly, because multiple carriers can provide interconnecting networks. Fourth, the goal of avoiding duplicative facilities is not applicable as an aspect of natural monopoly in local telecommunications, because substantial duplication of facilities has already occurred.

Even if the technology of transmission were to exhibit natural monopoly properties, the technology does not necessarily constitute a barrier to entry. New entrants can compete with the incumbent to serve the market. Moreover, even if the technology were to have natural monopoly properties, it does not necessarily follow that the incumbent utilizes the technology so efficiently as to render the market invulnerable to more efficient entrants. If, as this Article asserts, the technology of the local exchange is no longer a natural monopoly, entry into the local loop will continue, and the MFJ's line-of-business restrictions should be eliminated.

C. *The Local Exchange Has Lost or Is Quickly Losing the Characteristics of a Natural Monopoly*

1. *There Is No Single Best Technology for Local Telecommunications*

The natural monopoly argument asserts that cost efficiencies are obtained from a single supplier, given the characteristics of a specific technology for carrying out a specific task. With multiple technologies, each with different characteristics, efficiency may require production by multiple firms, so that monopoly no longer yields cost efficiencies. Perhaps the notion of a best technology once served as an accurate description of the traditional telecommunications system, which consisted of copper wires for transmission, central switching equipment, and very basic equipment on the customer's

25. Whether the local exchange ever exhibited the properties of natural monopoly is beyond the scope of this article.

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premises. This description no longer applies,²⁶ as a consequence of technological change and industry developments, particularly since the MFJ took effect. In short, there is no longer a single best technology for telecommunications transmission.

Instead, there are now multiple telecommunications technologies in addition to the traditional copper wire. The alternative modes of transmission include coaxial cable, fiber-optic cable, satellite, microwave, cellular, and other radio technologies. Each of these technologies has various advantages and disadvantages in terms of cost and performance. It is no longer possible, nor is it desirable, to pick a single mode of transmission to the exclusion of all others.²⁷ The variety of competing transmission technologies implies that it is no longer possible to define a natural monopoly technology for local telephony.

It may be asserted that a combination of transmission modes is best, and that this unknown combination should be chosen efficiently by a single supplier. Such an attempt to revive the natural monopoly argument, however, would be plagued with difficulties, since the correct mix of technologies could be provided by multiple suppliers. Moreover, since the relative cost and performance characteristics of the alternative technologies change continuously, the optimal mix of technologies will frequently change.

Not only is there no single best technology for traditional telephone service, there is no single best technology for handling the many new types of services the telecommunications industry now provides. The traditional telecommunications system was designed to handle voice transmission from stationary equipment. Today, however, consumers demand many alternative communications products, including fax, data transmission, interactive services, video transmission, and both mobile and stationary communications. George Calhoun forecasts that future telecommunications technology will not be confined to a single form but will include many forms of access,

some on a small scale (e.g. microcell radio), some of global proportions (VSAT), some optimized for narrowband transmissions, others for broadband, some for vehicular communications, others for

26. See generally NORTH AM. TELECOMMUNICATIONS ASS'N, *supra* note 5, ch. V.

27. George Calhoun asserts that "the abandonment of hierarchical structures is gathering momentum, especially in the core public network and in specialized computer networks." GEORGE CALHOUN, *WIRELESS ACCESS AND THE LOCAL TELEPHONE NETWORK* 532 (1992). He describes the "laminar network," "a series of partly competing, partly complementary, somewhat differentiated, overlapping access fabrics" that "will consist of multiple layers of transmission facilities for accessing the core network at an increasing number of gateways. The lowest levels will still be copper-based fabrics, the vast installed base of wireline telephony and coaxial cable television plant that will continue in use for decades. Growing over these there will be several new layers of fiber optic plant—and, because of its nature, ever more layers of digital radio. Even within a given fabric layer there will almost certainly be a great deal of technical diversity." *Id.* at 537, 539.